

Work Order ID 73011

Tuesday, August 23, 2011 3:08:22 PM



Page 1

Item ID: D205-634-041

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 8/23/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 9/9/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan:

Date: 11-08-23

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D2580-041

Rev.D DEO-D1

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG002

N/A

110

0.00



BENDING MACHINE - SKIDTUBES

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio 16

2-Cut tubes as per Dwg. D2580

3- scribe batch# in aft end of tube

[Handwritten signature]
DP 11-10-19

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120		0.00							
Skidtubes									
Skidtubes	Memo	0.00							
	1- Deburr ends and remove bending marks								
	2- Prepare tube for welding as per QSI 004								
130		0.00							
QC									
Quality Control	Memo	0.00							

BB 11/10/28

1 Ø BB 11/11/06

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Approvals: Process Plan: Date: Tooling: Date:

Stop



QC: Date: SPC (Y/N): Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

i40

0.00



Skidtubes

Skidtubes

Memo

0.00

1-Weld step D2576 as per Dwg. D2580 and OSI 004
A/R M118736 *BB 11/11/01*

2-Grind welds on step as per Dwg D2580

3-Weld spacers as per dwg D2580

A/R M118736

BB 11/11/01

3- *** N/A**** Insert D4202-1 spacer, swage as per QSI002 and trim/ grind
flush per QSI002 and dwg. Hold x-bolt with DT9701 Use tube expander 1/2
x17G to start expansion and finish with 1/2 x 18G to achieve dwg dimension.

GRIND WELDS

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64",
adjust stopper not to hit web, Deburr

BB 11/11/03

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Deburr

7-Drill pilot holes for Tow ring using DT8091. open to .640" and Deburr.

C-Boel

DD

11-11-4

Dart Aerospace Ltd

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Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

150

QC10- Inspect visual per QSI004- ground welds

0.00



QC

Memo

0.00

Quality Control

11-11-04

1

160

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

11-11-04 (1)

170

Pressure Wash per QSI005 4.3

0.00



HandFinish

Memo

0.00

Hand Finishing

Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.

1 11-11-08

W/O:		WORK ORDER CHANGES					
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Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Powder Coating

Memo

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

1:45
320°F
2:15

0.00

Handwritten signature: XQ M-LW/08

190

QC3- Inspect Part Finish

0.00



QC

Quality Control

Memo

0.00

Handwritten signature: 1 BL 11-11-9

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Customer:

Reference:

Run Start



Approvals: Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

200

0.00



HandFinish

Memo

0.00

Hand Finishing

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates
A/R ☐ ☐ ☐ Sikaflex-291 ☐ 119443 ☐ ☐
Sikaflex expire date: 12-1

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive
A/R ☐ ☐ ☐ Sikaflex-291 ☐ 119443 ☐ ☐
Sikaflex expire date: 12-1

5-Wing Walk as per Dwg D2580 and QSI 005 4.4
Batch: 18788

1 BR 11-11-9

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Required Date: 9/9/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024	0.00 0.00							
220 Packaging Packaging Packaging	Packaging Memo Identify and pack for shipping as per PPPD205-634-041 Location: _____ PPP Rev: _____ <i>PM 74690</i>	0.00 0.00							
230 QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.00							

*011/11/02 C**11/11/12**MF 11-11-09*

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Work Order ID: 73011

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 8/23/2011

Required Date: 9/9/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30
KJ IPP Rev P 10.02.19
per PAR09-043 EC verified by:DD
IPP Rev. O 06.02.28 Added paperwork EC
IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM IPP Rev:Q
10.12.01 as per chg003 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D4202-1 **D2579**
Spacer

Manufactured No

140

Each

443.0000

20

20

Location

Loc Qty

Loc Code

LG002

443

66929

106

67129

196

67308

1

67430

140

D2580-1

Manufactured No

110

Each

4.0000

1

1

205 Skidtube bent detail

Location

Loc Qty

Loc Code

LG

4

72840

4

D2576-3

Manufactured No

140

Each

27.0000

1

1

Step (maching detail)

Location

Loc Qty

Loc Code

LG

27

66156

27

BE 11/10/01
B 73751 20

DP 11-10-19
BE 11/10/01

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Page 2

Work Order ID: 73011

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 8/23/2011

Required Date: 9/9/2011

Start Qty: 1.00

Required Qty: 1.00

D2855

Manufactured No

200 Each

28.0000 1 1



Cap



BR 11-11-9.

Location

Loc Qty

Loc Code

FP007

28

65519

2

65569 ✓

26

AN3-5A

Purchased No

200 Each

1,029.000 2 2



Bolt



BR 11-11-9.

Location

Loc Qty

Loc Code

ST350

1029

115371 ✓

46

117423 ✓

683

118626

300

AN960JD10L

* NAS1149D03321 ✓

Purchased No

200 Each

0.0000 2 2



Washer



2. BR 11-11-9.

ALS7-1032-130

Purchased No

200 Each

1,155.000 50 50



Insert



BR 11-11-9.

Location

Loc Qty

Loc Code

ST282

1155

117717

899

118386

256

119530.

50.

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Dart Aerospace Ltd

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Page 3

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Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 8/23/2011

Required Date: 9/9/2011

Start Qty: 1.00

Required Qty: 1.00

AN3C4A

Purchased

No

200

Each

2,261.000

50

50



BOLT



BR 11-11-9.

Location

Loc Qty

Loc Code

ST350

118706.

2261

50.

117313

2

117688

36

117795

1

117872

22

118012

20

118112

40

118451

1000

118628

1140

AN960C10L

✱

NAS1149C0332
R

Purchased

No

200

Each

0.0000

50

50



118354.



50

BR 11-11-9

washer

D3566-13

Manufactured

No

200

Each

23.0000

1

1



BR 11-11-9.

Gasket

Location

Loc Qty

Loc Code

FP

4

69281

4

FP014

19

68341

1

72149

18

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Page 4

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Parent Item Name: Replacement Skidtube

Start Date: 8/23/2011

Required Date: 9/9/2011

Start Qty: 1.00

Required Qty: 1.00

D3566-5
Gasket

Manufactured No

200 Each

22.0000 1 1



BR 11-11-9.

Location

Loc Qty

Loc Code

FP015

74387

22

68961

1

71601

1

72849

20

D3566-1
Gasket

Manufactured No

200 Each

24.0000 2 2



BR 11-11-9.

Location

Loc Qty

Loc Code

FP015

73303

24

68924

2

72848

22

D3564-11
Wearshoe

Manufactured No

200 Each

13.0000 1 1



BR 11-11-9.

Location

Loc Qty

Loc Code

FP020

73146

13

72207

13

D3564-13
Wearshoe

Manufactured No

200 Each

8.0000 1 1



BR 11-11-9.

Location

Loc Qty

Loc Code

FP016

73323

2

69280

2

FP017

6

71594

6

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Start Date: 8/23/2011

Required Date: 9/9/2011

Start Qty: 1.00

Required Qty: 1.00

D3564-9

 Manufactured No
 Wearshoe

200 Each 14.0000 1 1



BR 11-11-9.

Location	Loc Qty	Loc Code
FP019 73345.	5	
67590	4	
69943	1	
FP020	9	
72208	9	

D3564-5

 Manufactured No
 Wearshoe

200 Each 12.0000 1 1



BR 11-11-9.

Location	Loc Qty	Loc Code
FG 73330.	2	
34806	2	
FP019	10	
72164	10	

D2594-3

 Manufactured No
 O-Ring, 205 Skidtube

200 Each 548.0000 16 16



BR 11-11-9.

Location	Loc Qty	Loc Code
FP-A	548	
65518	41	
66952 ✓	507	

16.

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Start Date: 8/23/2011

Required Date: 9/9/2011

Start Qty: 1.00

Required Qty: 1.00

D2594-1

Manufactured No

200

Each

242.0000

16

16



Plug, 205 Skidtube



BR 11-11-9.

Location

Loc Qty

Loc Code

FP-A

73401

242

42807

28

67441

7

68943

6

72127

201

16

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DESIGN #	DRAWN BY RH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D2580	REV. 0 SHEET 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY	SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

RELEASED
07.06.28 #D

DEO ATTACHED
UNDER REVIEW

PHOTOGRAPH
RMV 4/11.06.30

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

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SUBJECT TO AMENDMENT

WITHOUT NOTICE

WORK ORDER

NO. 73011

PH-08-23

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
SEE NOTES ON
PAGE 2 FOR D2580-041 AND
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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RELEASED
07-06-28

~~DEO ATTACHED~~
RMV 6/11/06 30

Technical drawing of a circular component with the following annotations and dimensions:

- Annotations:**
 - DRILL PRIOR TO D2855 CAP INSTALLATION (2 PLACES)
 - AN3-SA BOLT (1)
 - AN96QJ10L WASHER (1)
 - (2 PLACES)
 - D2855 CAP
 - SEAL WITH SIKAFLEX-241/-291
- Dimensions:**
 - $\phi 0.208$
 - 0.40

Diagram of a wheel assembly with labels:

- D2579 SPACER
- D2596 WEB (REF)
- ALS7-1032-130 (REF) (TYP 50 PLACES)
- AFTER PERFORM
 1. CHA
 2. INSU
 3. WE
 4. C'B

AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:

1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (20 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP

2) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ASSEMBLY GLOSS WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

37.50
DISTANCE TO AFT END
OF D2596 WEB
3
7
1.750
1.750
ø0.508 (TYP.)
(40 PLACES)
REFER TO DETAIL A
8.750
17.375
26.000
34.188
57.313 (REF)
7 EQUAL SPACES
8.18B PITCH
38.0
91.50
190.0
(D2500-1)

1

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DESIGN	11
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CHECKED *HL*

DATE _____

07.02.27

DRAWN BY

APPROVED

—

DART

DRAWING NO.

02580

DATE	12/20/2000
TIME	10:00

0.05 0.10

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 HANLEY, ONTARIO, CANADA

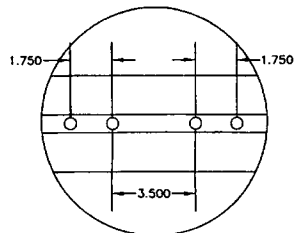
REV. D

SHEET 2 OF 3

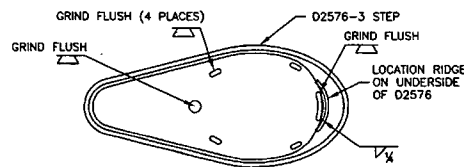
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1005104

DETAIL E
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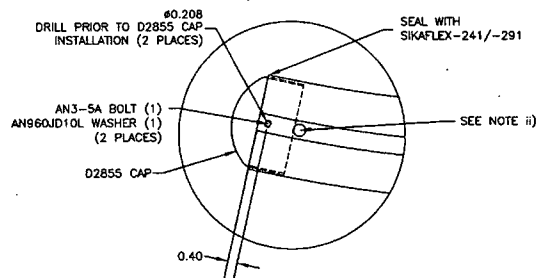
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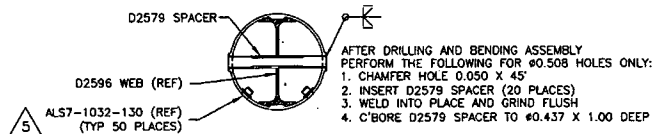
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07-10-18

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RMV 09.06.30

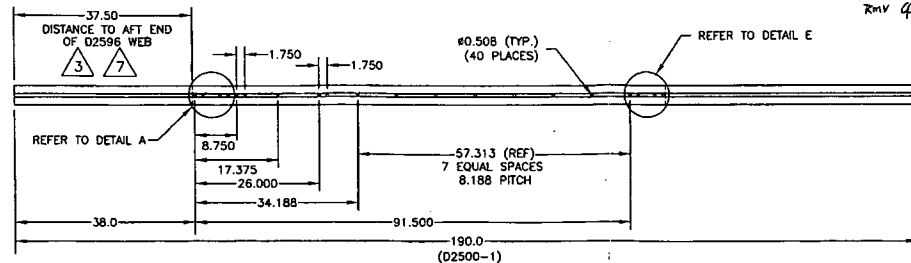
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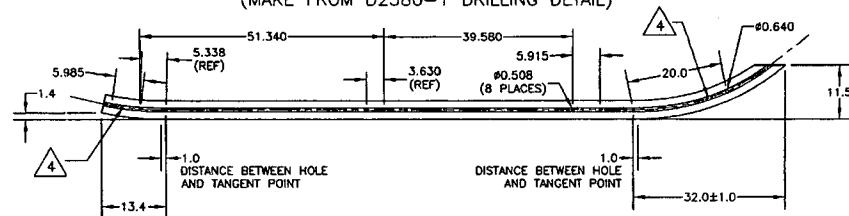
SECTION H-H
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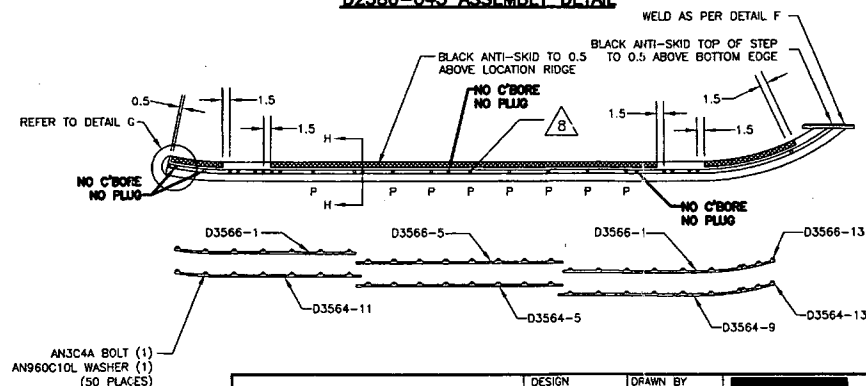
D2580-1 DRILLING DETAIL



D2580-5 BENDING AND CUTTING DETAIL
(MAKE FROM D2580-1 DRILLING DETAIL)



D2580-045 ASSEMBLY DETAIL



D2580-045 NOTES

- FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB POWDER COAT ENTIRE ASSEMBLY GREEN (REF. 4.3.5.8) PER DART QSI 005 4.3 BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION

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CHECKED H	APPROVED H	DRAWING NO. D2580	REV. D SHEET 3 OF 3
DATE 07.02.27	TITLE 205 SKIDTUBE ASSEMBLY	SCALE 1:24	